[Control number]   J0082217

[Document title]   Specification

[Title of the invention]

Method for generating a print image data file, method for storing print image data, a data storage medium therefor, a software product therefor, and an apparatus for generating an image data storage file

[Detailed description of the invention]

[0001]

[Technical field of the invention]

The present invention relates to a method for storing print image data in a printer that prints print image data stored in the printing apparatus (printer) in response to a specific print command, to a method for generating the print image data file, to a recording medium for storing a computer program achieving said method, to a computer program product comprising executable commands of said recording method, and to a file generating apparatus for creating the image data storage file used for storage.

[0002]

[Prior art]

A POS terminal apparatus, for example, prints a logo containing the store name, company name, etc., to a receipt on which sale transaction information is printed. Logos printed by a POS terminal often contain special decorative characters or a special design, and most logos therefore consist of image data.

[0003]

This type of image data file is typically rather large and much time would therefore be required for printing if the logo data is sent to the printer each time a receipt is printed. It is also desirable to complete the purchased product registration and transaction process as quickly as possible with a POS terminal, and fast printing in particular is desired. Frequently printed logo data is therefore commonly stored (registered) in non-volatile memory in the POS terminal printer so that by receiving a specific print command the printer reads the registered logo from non-volatile memory and prints the logo. It is therefore not necessary for the logo data (mainly image data) to be sent from the host, thus reducing the load on the host and significantly improving the print speed because the logo data transmission time is eliminated.

[0004]

It has recently become possible to use printers capable of printing two or three colors for POS printing. The ability to print multiple colors greatly increases the applications for which POS printers can be used beyond simply printing logos, including, for example, printing product advertisements, event announcements, and coupons. Color image data is also significantly greater than black and white image data, and processing color images

requires significantly more time. The need to quickly print color images therefore makes it even more important to store the image data in the printer. The present invention relates to storing this type of logo data in a printer.

[0005]

This specification uses "logo data," "logo information," and simply "logo" in reference to data that is stored inside a printer as described above, irrespective of whether it is image data or text data and whether the data is for monochrome or color printing. Furthermore, except in extremely rare cases, this logo data is mostly image data. For convenience of describing logo data registered in a printer the logo data may also be called "image data," and when logo data is referred to as image data it is used to also include text data which may as an exception be used as a logo.

[0006]

[Problem to be solved by the invention]

As described above, the printing speed can be improved and the processing load on the host can be reduced by storing logo data to non-volatile storage in the printer.

[0007]

However, after the logo data is generated various additional steps are needed in order to store the logo data to non-volatile storage in the printer. This is further described using a POS printer. A POS printer is normally connected to the host device of the POS terminal at each checkout station. This means that to store logo data to the POS printer while the printer remains connected to the POS terminal, a logo storage program must be installed to the host device of the POS terminal. It is necessary, for example, to create and save the logo data (image data) as a file, read this file with the logo storage program installed to the host, and then register the logo data in the printer. These steps are also necessary when the logo data file is sent to the POS terminal.

[0008]

Installing such a logo storage program to each POS terminal is extremely cumbersome. Disconnecting each printer and connecting each printer to an installation apparatus also requires each printer to be disconnected and reconnected, and the logo data storage operation is therefore cumbersome.

[0009]

The present invention is directed to resolving these problems and an object of the invention is to provide a print image data storage method for storing logo or other print image data (including text data) to a printer without requiring installation of such a registration program to the host. A further object of this invention is to provide an apparatus for creating an image data storage file enabling a logo or print image data to be registered in a printer.

[0010]

[Means for solving the problem]

The invention achieving the above objects is described briefly below according to the principle of the invention.

[0011]

A print image data registration method according to the present invention solves the above-described problems by creating an image data storage file containing the print image data to be stored to the printer and a command data set for storing the print image data to the printer and then registering the print image data based on a transmitted command data set as a result of the host to which the target printer is connected reading the image data storage file and sending the command data set and print image data in the file to the target printer.

[0012]

A method for creating an image data storage file according to a first aspect of this invention is characterized by (a) a step for creating print image data; (b) a step for creating a command data set for storing the print image data to non-volatile storage in the printer; (c) a step for creating an image data storage file containing both the print image data and command data set; and (d) a file output step for outputting the image data storage file.

[0013]

It is therefore possible to register the stored image data in the non-volatile storage of the printer without installing a special registration program in the host by storing the print image data and a command set for storing the print image in the printer as a single image data storage file so that the host reads the command data set and print image data from the image data storage file and runs the command data set.

[0014]

In a method for creating an image data storage file according to a further aspect of this invention the data command set produced in the above step (b) is a storage command data set run by the target printer to register print image data in the non-volatile storage of the target printer. Because a storage command data set executed by the target printer for the registration process is included in the image data storage file, print image data can be registered by the host device simply reading the image data storage file and sending the storage command data set and print image data to the target printer.

[0015]

In a method for creating an image data storage file according to a further aspect of this invention the command data set produced in the above step (b) includes a storage command data set executed by the target printer to register the print image data, and a data transmission command set for sending the storage command data set and print image data from the host device to which the printer is connected to the printer.

[0016]

In the image data storage file according to a further aspect of the present invention the data transmission command set in the command data set created in step (b) includes an executable command set enabling the target printer port number and other communication parameters to be input from the host device.

[0017]

Because the data transmission command set is incorporated in the image data storage file as a result of using an image data storage file produced by the present invention, the storage command data set and print image data can be sent to the target printer by simply inputting the communication parameters for the target printer, and registering the print image data is therefore simple.

[0018]

In a method for creating an image data storage file according to a further aspect of this invention the data transmission command set in the command data set produced in step (b) comprises an executable command set for sending the storage command data set and print image data to the printer when the image data storage file is opened. By using an image data storage file according to this aspect of the invention inputting the target printer communication parameters is not necessary and print image data can be easily registered in the target printer by the host device simply opening the image data storage file. Note that the target printer port number and other communication conditions are set in the communication parameters generated for each target printer when the data transmission command set is produced.

[0019]

A print image data storage method for storing print image data to non-volatile storage in a printer according to the present invention has: (a) a step for creating print image data; (b) a step for creating a command data set for storing the generated print image data to non-volatile storage in the printer; (c) a step for creating an image data storage file containing both the print image data and command data set; (d) a file output step for outputting the image data storage file; and (e) a storage step whereby the host device to which the target printer is connected registers the registration image data in a printer connected to the host device based on the command data set of the image data storage file. Print image data can thus be stored to a printer without installing a special registration program in the host.

[0020]

Furthermore, an apparatus for creating an image data storage file according to the present invention has: an image editing means for creating print image data; a command data set generating means for creating a command data set for storing the print image data created by the image editing means to the printer; a file generating means for creating an image data storage file containing both the print image data and the command data set

generated by the command data set generating means; and an output means for outputting the image data storage file.

[0021]

[Preferred embodiments of the invention]

A preferred embodiment of the present invention is described below. It will be noted that the following embodiments are shown by way of description only and shall not limit the scope of the invention. It will be obvious to one with ordinary skill in the related art that various alternative embodiments can be achieved by replacing some or all of the elements described below with equivalent elements, and that all such variations are included in the scope of this invention. Storing logo information to a POS printer that most frequently prints such logos is described below based on the above assumption. It will be obvious, however, that the present invention also applies to any printer having the ability to store data for at least one logo in the printer and a function for printing the logo in response to a particular print command, including such printers as transaction receipt printers used in ATMs, parking lot ticket printers, and even customer number printers in a store or bank.

[0022]

The primary use for POS printers has conventionally been to print transaction data, and POS printers have therefore typically been monochrome printers, but more recent POS printers are also capable of color printing. These printers are printers capable of printing only a few specific colors (such as red and black, for example) and are not full-color printers because of reasons relating to print speed and economy. Even if the printable colors are the two colors red and black, for example, so that there are two types of color, it is still possible to specify multiple gradations (256 gradations, for example), and by presenting color gradations with dithering, for example, and combining red, black, and white (non-printing), extremely subtle, complex colors can still be presented. Even more complex, subtle color printing is possible if the printer can print three or more colors. The color printing capabilities of such a POS printer enables the POS system to be used as a more effective tool.

[0023]

The primary purpose of the receipts printed by a POS printer is to provide the customer with an accurate record of a particular purchase, including details about the purchased products and the purchase price. Therefore, when a transaction process is completed, the receipt is handed to the customer, who can then check the printed content to make sure there are no errors. Customers may also refer to the receipt after returning home in order to record the purchases in a home budget ledger. Receipts are thus individually handed to the customer and contain information that is important to the customer, are therefore fundamentally different from common flyers and advertisements, and are often handled by the customer as a record containing important personal information. As noted above, customers often check the content of the receipt after returning home in order to

confirm transaction content. It therefore follows that by printing logos, pictures or photographs for advertisements, text messages and announcements (referred to below as announcement information) on the receipt, the product promotions and announcements, etc. printed on the receipts can be expected to be particularly effective.
[0024]

As noted above, receipts are handed directly and individually to each customer, and their ability to get the attention of and appeal to the customer is noticeably greater than normal advertising banners. Image information printed in color in particular is an effective means of getting the customer's attention and attracts attention every time the customer checks the receipt, and printing this advertising information on receipts is therefore particularly effective as an advertising and sales promotion means.
[0025]

POS systems having POS printers capable of printing image information such as described above are more than simply systems for registering sales transactions because they can also be used as a product advertising and sales promotion tool, and use in the sales and distribution industry is therefore expected to grow significantly in the coming years. As logo printing is employed for a wider range of uses, however, the need to store or change the logo stored in the printer will also increase, and it is therefore necessary to simplify the process used to store a logo in a printer.
[0026]

(Logo printing)

Storing a logo in a printer and logo printing are described next using Fig. 7. Fig. 7 is a function block diagram of the host 50 and printer 10·of POS terminal 40. The display, cash drawer, and other parts of the POS terminal 40 not related to logo printing are not shown in Fig. 7.
[0027]

The host 50 controls the overall POS terminal 40, and controls the overall process for registering purchased products and completing the transaction. The host 50 can be any general purpose computer running POS software. The host could, for example, be configured using a CPU 51, ROM 52, RAM 53, communications controller 54, input/output controller 56, and interfaces 55, 57. The host 50 is connected to the POS server (not shown in the figure) via an in-house LAN or other communication path, retrieves product prices and other information from the POS server via interface 55 and communications controller 54, and runs the product registration and transaction process. The content of the product registration and transaction process is displayed on a display such as the operator display and customer display (not shown in the figure) by way of the input/output controller 56 and interface 57, and is printed to the receipt and journal paper (not shown in the figure) by the printer 60.

[0028]

The printer 60 is connected by interface 61 to the host 50, and data sent from the host is received via interface 61 by the receiver 62. The received data is stored to receive buffer 63 in the order received, and in principle is interpreted in the order stored by the controller 64. If an executable command is detected as a result of data interpretation, the command is executed; if print data is detected, the data is converted to printing pattern data and stored to print buffer 65. Color printers have a separate print buffer (not shown in the figure) for each printable color, and store print pattern data for each printed color. When a print command is executed, the data stored to print buffer 65 is transferred to the print mechanism 66 and is printed by the print head (not shown in the figure) of the print mechanism 66. When a line feed command is detected, a paper feed mechanism 67 is driven to transport the printing paper (not shown in the figure). The print mechanism 66 includes the paper feed mechanism and print head, as well as a carriage drive mechanism (also not shown) in the case of a serial printer. Various kinds of print heads can be used in a POS printer, including thermal heads, ink jet heads (including both ink jet heads driven with a piezoelectric element and bubble drive heads using a heat element), and dot impact heads.

[0029]

When a store logo command is received from the host 50, the following logo data is registered to a specific address in logo register 68, which is non-volatile memory. The logo data is normally the logo of the store or company, that is, information other than the product information and transaction information printed to a receipt. Logo data stored to the logo register 68 has primarily been the trademark or logo of the store, but recently often includes product advertisement information, product coupons, and other types of image data. The logo data stored to the logo register 68 is therefore not limited to the store or company logo, and includes image information containing pictures or photographs for advertising information, announcements, or coupons. When the logo is printed in color, color image information is also stored to the logo register. As noted above, logo, logo data, and logo information are used below in reference to all such types of information printed to a receipt. When a print logo command is received from the host 50, the logo data specified by the print logo command is transferred from logo register 68 to the print buffer 65 and printed to a receipt. The print data transmission load on the host device can therefore be reduced and high speed printing is possible.

[0030]

As shown in Fig. 8, the printer 60 can be configured using a microprocessor or other type of CPU 70; ROM 71, RAM 72, non-volatile storage 73, an interface (I/F) 61, printing mechanism 66, and transportation mechanism 67 connected to the CPU 70 by way of bus 34; and an operating system and other control program stored in ROM 71 and RAM 72. The receive buffer 63 and print buffer 65, for example, can be provided using designated

areas in RAM 72, and flash memory or other type of non-volatile storage 73 can function as the logo register 68. Furthermore, the logo register 68 can be provided in a designated area in RAM 71 if SRAM is used for RAM 71.

[0031]

(Overall concept of the process for storing logo data in the printer)

The process for storing logo data to the printer is described next.

[0032]

The logo data storage process of the prior art is described first. Fig. 9 shows the concept of the prior art process from creating the logo data to storing the logo data in a printer.

[0033]

Before the logo data can be stored in the printer, the logo data to be stored must first be saved. This can be accomplished by newly creating the logo data to be stored, or by using an existing image file for the logo data. To create new logo data, a general purpose image editing program 81 is used to capture an existing graphic or picture 80, merge the graphic 80 with text, for example, and thus create a new image file 82. More specifically, an image recorded with a digital camera, a photograph or picture captured with a scanner, or other image can be used as the image file 82.

[0034]

To store logo data in the printer, a logo data storage program 83 sends a logo storage command (also referred to below as the storage command set) and the logo data to the printer (referred to below as the target printer) to which the logo data is to be stored. The target printer controller 64 (Fig. 7) interprets and executes the received storage command set to store the received logo data (print image data) to the logo register 68 (Fig. 7). In this case the printer 50 must be connected directly to the logo registration tool. In supermarkets or department stores where a large number of POS terminals are used, disconnecting the POS printer from each POS terminal and connecting it directly to the registration tool is extremely cumbersome.

[0035]

Another method is to install a logo data storage program in the host 60 so that the host reads the logo data as a file and can register the logo data in the printer using a special logo registration program. This method, however, also requires installing the storage program in each POS terminal.

[0036]

An example of the method of the present invention for storing logo data to a printer is described next with reference to Fig. 2. Fig. 2 shows the concept of the overall process from creating the logo data to storing the logo in the printer using the method of this invention. The following description refers to this figure.

[0037]

Before logo data can be stored to the printer it must first be created. This can be accomplished by newly creating the logo to be saved, or by using an existing image file. To create a new logo, an existing picture, photograph, or other image data 80 is captured using a logo editing tool 2, and text is then added or other images are merged as appropriate to create the source logo data 3. The logo editing tool is used to create a new logo for a particular logo printing purpose. The logo information is often created for a particular printing purpose such as printing a coupon, printing a corporate or store logo, or for product advertising. Creating a specific logo using the logo editing tool is a process of creating the text data, capturing the pictures, photographs or other graphic data, and then appropriately combining these text and image elements to achieve the desired logo.

[0038]

If existing image data is used as is, a general purpose image editing tool 81 can be used to capture the photograph, image, or other image data from a digital camera or scanner, for example, and create the image file 82 that is then used as the source logo data. If an existing image file 82 is thus used as is, it is not necessary to use the logo editing tool 3. Data thus created as the basis for logo registration is referred to herein as the source logo data.

[0039]

An image data storage file compiler 4 then adjusts the source logo data colors and size to match the width of the printing paper used by the target printer to which the logo data is stored, the print resolution, and the printable colors. The logo data after adjusting the colors (by a color reduction process, for example), size, and resolution (this type of data is referred to herein as a logo, logo data, logo information, or print image data) is the logo data to be stored to the target printer.

[0040]

The present invention enables logo registration without installing a special logo registration tool by thus creating image data storage file 5, which is an image file with embedded commands containing the logo data and the command data set needed to register the logo data, and then causing the host device 60 to read the image data storage file 5.

[0041]

(Image data storage file compiler)

Fig. 1 is a function block diagram showing the basic configuration of an image data storage file compiler 4 according to a preferred embodiment of the present invention.

[0042]

In order to register a logo in printer 50, the source logo data 3 or 82 used as the basis for logo registration by means of the logo editing tool 2 or general purpose image

editing tool 81 is needed. The image data storage file compiler 4 according to the present invention is described first below assuming that the source logo data file 3 or 82 has been created, and the logo editing tool 2 is more fully described further below.

[0043]

The logo generator (or print image data generating means) 10 of the image data storage file compiler 4 creates the logo data (print image data) from the source logo data file 3 or 82, and stores the logo data to logo storage 11. The logo generator 10 executes the processes for reducing the colors of the source logo data to the printable colors of the target printer and image processes for adjusting the size of the logo to the width of the print medium and the resolution of the target printer to enable logo printing. The final image data for registration to the printer after image adjustment is completed is stored to the logo storage 11 as the logo.

[0044]

The image data storage file compiler 4 also has a command set generator 12. The command set generator 12 generates a set of commands for storing the logo data created by the logo generator 10 to the target printer. The command set generator 12 has a storage command set generator 14 and a data transmission command set generator 13. The storage command set is a set of commands sent to the printer for storing the logo data in the target printer.

[0045]

The data transmission command set generator 13 of this embodiment has a parameter command set generator 15 for creating an executable command set for accepting the port and other parameter input; a port detection command set generator 16 for creating an executable command set for detecting the port to which the target printer is connected; and a generating means 17 for creating a data transmission command set for sending the storage command data set and logo data to the target printer.

[0046]

The image data storage file generator 18 (simply the file generator 18 below) then combines the logo data (print image data), storage command set, and data transmission command set to generate the image data storage file 5 (Fig. 2). This image data storage file is preferably generated as a single file, but could be a set of multiple linked files. It should also be noted that whether the data transmission command set is created, the parameter input command set is created, or the port detection command set is created in addition to the logo data and storage command set can be determined by a controller not shown in the figures.

[0047]

The image data storage file output from the file generator 18 is then sent by the output means 19 over a communication path to the host device of the POS terminal to which

the target printer is connected, or is written to floppy disk, a memory card, or other storage medium (not shown in the figure). When the host 50 (Fig. 7) reads an image data storage file sent by way of the communication path or an image data storage file recorded to floppy disk or other storage medium and thus reads the command data set in the image data storage file, the logo can be registered in the printer without installing a special program on the host 50.

[0048]

Similarly to the printer 60 configuration shown in Fig. 8, the image data storage file compiler 4 can be achieved using a microprocessor or other CPU, ROM and RAM connected to the CPU via a bus line, and an operating system or other control program stored to the ROM and RAM. The CPU, ROM and RAM operate in conjunction with the control program stored to ROM and RAM, and thus function as the various means 10, 11, 12, 13, 18, 19.

[0049]

A process for creating this image data storage file is described in further detail below with reference to a flow chart. Fig. 3 is a flow chart showing steps for creating an image data storage file 5.

[0050]

The print image data (logo data) is first created by logo generator 10 (S110).

Next, whether generating the print image data is finished is confirmed (S120), and if not (S120 returns no), the procedure waits for the print image data to be completed (S110 and S120 repeat). If the logo data is completed (S120 returns yes), the command data set is created (S130), and the logo data and command data set are combined to create the image data storage file 5 (S140). The resulting image data storage file 5 is then transferred to the host 50 of the target printer using a data communication path or a floppy disk (S150).

[0051]

Fig. 4 is a flow chart showing the command data set generating step (S130 in Fig. 3) in detail.

[0052]

When creating the print image data is completed (S120 in Fig. 3 returns yes), the storage command set run by the printer 60 to store the logo data in the printer is generated (S131). The data transmission command set is an executable command set run by the target printer 60 to store the logo data in non-volatile memory inside the printer.

[0053]

After the storage command data set is completed (S131), whether the data transmission command set is to be added to the executable command set is determined (S132). A configuration enabling the data transmission command set to be added selectively according to the type of image data storage file created is possible.

[0054]

If the data transmission command set is not added (S132 returns no), control advances directly to the image data storage file generating step S140. If the data transmission command set is added (S132 returns yes), the data transmission command set is generated (S133). The data transmission command set is a set of commands for sending the logo data and storage command set from the host 50 to the printer 60. This enables the host 50 to send the storage command set and logo data to the printer 60 automatically when the image data storage file is read or by simply specifying the port number and other specific parameters.

[0055]

Next, it is determined whether to include a port detection command set in the data transmission command set (S134). If it is necessary to include the port detection command set (S134 returns yes), the port detection command set is created (S135). If including the port detection command set is not necessary (S134 returns no), a parameter input command set is created (S136).

[0056]

Fig. 5 is a flow chart showing the image data storage file generating step S140 in Fig. 3 in detail.

[0057]

The image data storage file compiling step (S140 in Fig. 5) starts after the command data set is completed (S130 in Fig. 3). The first step in this image data storage file compiling operation is to create a file 41 containing the logo data (print image data) and the storage command data set created in the command data set generating routine (S131 in Fig. 4). Combining these two elements is indicated to the left of step S141 in Fig. 5. The logo data can be stored in the printer by sending this file containing the storage command set and logo data from host 50 to the printer 60.

[0058]

Next, whether the data transmission command set was generated in the command data set generating routine (S130) is confirmed (S142). If it was not, the merged file 41 from step S141 is output as the image data storage file 5. If the data transmission command set was generated (S142 returns yes), port detection command set presence is determined (S143). If the port detection command set was generated, the port detection command set is combined with the data transmission command set. If the port detection command set was not created, the parameter input command set is combined (S146).

[0059]

A file 42 (Fig. 5) combining a data transmission command set is then merged with the file 41 generated in step S141, and is output as the image data storage file.

[0060]

When an image data storage file incorporating the port detection command set in the data transmission command of file 42 is read by the host 50, the port detection commands are run to automatically detect the port to which the target printer 60 is connected, and the storage command set and logo data are then sent automatically from the host.
[0061]

If the parameter input command set is included in the data transmission command set of file 42, the parameter input commands are executed when the host 50 reads the image data storage file so that the port and other communication parameters can be input from the host 50. Once the parameters are input, the storage command set and logo data are transferred to the specified port and sent to the printer 60. .
[0062]

(Logo editing tool)

The logo editing tool is described next with reference to Fig. 6. Fig. 6 is a function block diagram showing an example of the logo editing tool 2.
[0063]

The logo editing tool 2 is used to create the basic layout of an effective logo image optimized for the particular advertisement, announcement, or other printing objective. The logo editing tool 2 can create the logo by combining graphic images and text, and the resulting logo is stored as a logo file. This logo editing tool 2 has an image data capturing means 31, image data storage 32, image processor 33, text editor 34, synthesizer 35, and source logo data storage 36.

The image data capturing means 31 reads and stores image data or text data. The read image data could be graphic data stored as an image file to magnetic disk, CD-ROM, or other storage medium from which it is read and stored to image data storage 32, or it could be captured from a digital camera or scanner. The graphic data could be a photographic image, graphic animation, geometric diagram, decorative text, or various shapes. Plural images can be separately stored to the image data storage 32. The image data capturing means 31 is preferably compatible with various graphic and image file formats so that it can read different types of image files.
[0064]

The image data stored in image data storage 32 is then processed by the image processor 33 to adjust the size and other image parameters as necessary. In addition to editing graphical image data, a text editor 34 can also be used to create and edit text data. Designating specific colors for the text is also possible. By enabling text data to be edited, text information for advertising slogans and announcements can also be included in the logo at the logo editing stage.
[0065]

The synthesizer 35 then merges the captured image information, image-processed image data, and/or text to create the desired logo. The synthesizer 35 combines plural image and text elements to create the desired source logo data. Factors in combining images and text include, for example, selecting the specific image and text elements, and specifying the size and position of each image and text element relative to the overall logo. The source logo data merged by the synthesizer 35 is merged as a combination of separate image or text data elements, and after merging is stored to the source logo data storage 36 as source logo data enabling the combined elements in the logo to be processed and edited as separate elements at a later time, such as in a metafile. It should be noted that while the image processor 33 and synthesizer 35 are shown as separate function blocks in Fig. 6, an image processing function could be provided in the synthesizer 35 for editing image size appropriately during the merging process.

[0066]

This example does not address applying a color reduction process to the source image data, but if the captured source image is a full color image, for example, the logo editing tool 2 can be configured to reduce the image to a specified number of colors before being stored as source logo data.

[0067]

[Effects of the invention]

The present invention creates an image data storage file containing both a command data set and the print image data (logo data), and sends this image data storage file via a communication path or causes the host 50 (Fig. 7) to read the image data storage file recorded to a floppy disk so as to execute the command data set in the image data storage file, thereby registering a logo in a printer without installing a special registration program in the host 50. It is therefore possible to register a logo by simply making the host read a file, and a wide range of logo printing needs can thereby be met.

[Brief description of the drawings]

Fig. 1 is a function block diagram showing the basic configuration of an image data storage file compiler according to a first embodiment of the present invention.

Fig. 2 schematically illustrates a process according to the present invention from generating a logo to storing the logo in a printer.

Fig. 3 is a flow chart showing the process for generating the image data storage file 5.

Fig. 4 is a flow chart showing in detail the command data set generating subroutine (S130) in Fig. 3.

Fig. 5 is a flow chart showing in detail the image data storage file generating subroutine S140 in Fig. 3.

Fig. 6 is a function block diagram showing a first example of a logo editing tool 2.

Fig. 7 is a function block diagram of the host 50 and printer 10 of the POS terminal 40.

Fig. 8 is a block diagram showing the basic configuration of a printer 60 configured using a CPU, ROM, RAM, operating system, and other control software.

Fig. 9 schematically illustrates a conventional process from generating a logo to storing the logo in a printer.

KEY TO THE FIGURES

2	logo editing tool
4	image data storage file compiler
5	image data storage file
10	print image data generator printer
11	logo storage
12	command data set
13	data transmission command set
18	image data storage file generator
40	POS terminal
50	host
60	printer
63	receive buffer
68	logo register

[Document title] Abstract

[Abstract]

[Problem]

To provide a method and apparatus for easily storing logo data to a printer.

[Means of solving the problem]

A logo storage file (image data storage file) is created by a step for creating the print image data, a step for generating a set of commands for storing the print image data to non-volatile storage in the printer, a step for compiling an image data storage file containing the print image data and command data set, and a file output step for outputting the image data storage file, and the host then reads this logo storage file and executes the command data set to register the logo in the printer.

[Selected figure] Fig. 1

TEXT IN THE FIGURES
FIG. 1
SOURCE LOGO DATA 3 OR 82
LOGO (PRINT IMAGE DATA) GENERATOR 10
LOGO STORAGE 11
STORAGE COMMAND SET GENERATOR 14

PARAMETER INPUT COMMAND SET GENERATOR 15
PORT DETECTION COMMAND SET GENERATOR 16
DATA TRANSMISSION COMMAND SET GENERATOR 17
FILE GENERATOR 18
OUTPUT MEANS 19
--> TO RECORDER
--> TO COMMUNICATION PATH

FIG. 2
PICTURE, PHOTOGRAPH, OTHER IMAGE 80
LOGO EDITING TOOL 2
GENERAL PURPOSE IMAGE EDITING TOOL 81
SOURCE LOGO DATA FILE 3
IMAGE FILE 82 (bmp, gif, other format)
IMAGE DATA STORAGE FILE COMPILER 4
IMAGE DATA STORAGE FILE 5
POS TERMINAL HOST 50
TARGET PRINTER 60

FIG.   3
IMAGE DATA STORAGE FILE FORMAT
S110   CREATE PRINT IMAGE
S120   IMAGE EDITING COMPLETED?
S130   CREATE COMMAND DATA SET
S140   CREATE IMAGE DATA STORAGE FILE
S150   OUTPUT IMAGE DATA STORAGE FILE
END

FIG. 4
S130   CREATE COMMAND DATA SET
S131   CREATE STORAGE COMMAND DATA SET
S132   ADD DATA TRANSMISSION COMMAND SET?
S133   CREATE DATA TRANSMISSION COMMAND SET
S134   INCLUDE PORT DETECTION COMMAND SET?
S135   CREATE PORT DETECTION COMMAND SET
S136   CREATE PARAMETER INPUT COMMAND SET
TO STEP S140

FIG. 5
S140   CREATE IMAGE DATA STORAGE FILE
S141   ADD STORAGE COMMAND SET
         ---> STORAGE COMMAND SET || LOGO DATA
S142   DATA TRANSMISSION COMMAND SET DETECTED?
S143   PORT DETECTION COMMAND SET DETECTED?
S144   INCLUDE PORT DETECTION COMMAND SET
S146   INCLUDE PARAMETER INPUT COMMAND SET
S145   ADD DATA TRANSMISSION COMMAND SET
         ---> DATA TRANSMISSION COMMAND SET | STORAGE COMMAND SET | LOGO
DATA
TO STEP S150

FIG. 6
IMAGE DATA READING MEANS 31
IMAGE DATA STORAGE 32
IMAGE PROCESSOR 33

TEXT EDITOR 34
SYNTHESIZER 35
SOURCE LOGO DATA STORAGE 36

FIG. 7
HOST 50
CPU 51
ROM 52
RAM 53
COMMUNICATIONS CONTROLLER 54
INTERFACE 55
INPUT/OUTPUT CONTROLLER 56
INTERFACE 57
DISPLAY DEVICES, CASH DRAWER, I/O DEVICES
IN-HOUSE COMMUNICATION NETWORK (LAN)
PRINTER 60
RECEIVER 62
RECEIVE BUFFER 63
LOGO REGISTER 68
PRINT MECHANISM 66
PRINT BUFFER 65
MAIN CONTROLLER 64
INTERFACE 61
TRANSMITTER 69
PAPER FEED MECHANISM 67

FIG. 8
HOST DEVICE 10
INTERFACE 61
ROM 71
RAM 72
NON-VOLATILE STORAGE 73
PRINT MECHANISM 66
PAPER FEED MECHANISM 67
CPU 70

FIG. 9
PICTURE, PHOTOGRAPH, OTHER IMAGE DATA 80
GENERAL PURPOSE IMAGE EDITING TOOL 81
IMAGE FILE 82 (bmp, gif, other)
LOGO DATA STORAGE PROGRAM 83
--> INSTALL SPECIAL LOGO REGISTRATION PROGRAM
POS TERMINAL HOST 50
PRINTER 60